CHAPTER FIVE

CLUTCH AND TRANSMISSION

CLUTCH

The clutch used on the Honda CB650 is a wet multiplate type immersed in the oil supply it shares with the transmission and engine. The clutch center is splined to the transmission main shaft and the clutch outer housing can rotate freely on the main shaft. The clutch outer housing is geared to the primary shaft.

The clutch release mechanism is mounted within the clutch cover. The mechanism consists of a lifter shaft, operated by the clutch cable, and an adjusting arm. Pulling the clutch lever and cable pivots the lifter shaft which in turn raises the adjusting arm. The arm pushes in on the lifter guide and the lifter plate disengages the clutch mechanism.

The clutch can be removed while the engine is in the frame.

Refer to **Table 1** for all clutch specifications. **Tables 1-3** are located at the end of this chapter.

Figure 1 shows the clutch assembly and **Figure 2** shows the release mechanism.

Removal/Disassembly

1. Drain the engine oil as described under *Changing Engine Oil and Filter* in Chapter Three.

2. Place the bike on the centerstand or place a milk crate or wood block(s) under the engine or frame to support the bike securely.

3. Slacken the clutch cable at the hand lever (**Figure 3**) and remove the clutch cable.

4. At the clutch mechanism, loosen the locknut (A, **Figure 4**) and remove the clutch cable from the lifter shaft lever.

5. Remove the rear brake lever (B, **Figure 4**).

NOTE

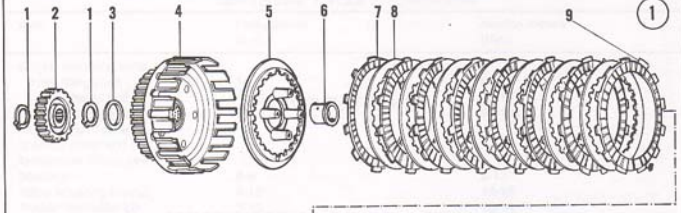
Steps 6 through 12 are shown with the engine partially disassembled. It is not necessary to do so for clutch removal and disassembly.

6. Remove the screws securing the clutch cover (**Figure 5**) and remove the cover and gasket. Remove and save the 2 locating dowels.

7. Remove the lifter guide, bearing and bearing retainer (**Figure 6**).

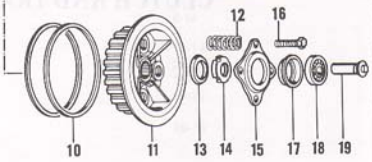
8. Using a crisscross pattern remove the clutch bolts (**Figure 7**) securing the clutch lifter plate and remove the lifter plate.

9. Remove the clutch springs (**Figure 8**).

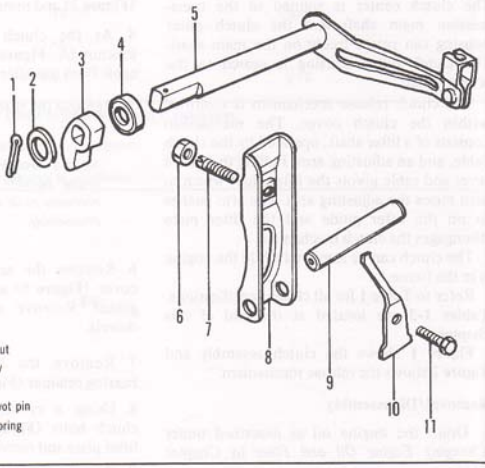


CLUTCH ASSEMBLY

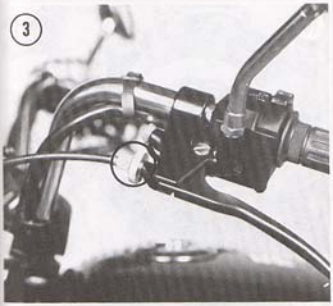
1. Circlip
2. Primary drive gear
3. Washer
4. Clutch outer housing
5. Pressure plate
6. Guide spacer
7. Friction disc "A" (7)
8. Clutch plate (7)
9. Friction disc "B" (1)
10. Disc pressure springs
11. Clutch center
12. Clutch spring (4)
13. Lockwasher
14. Lock nut
15. Clutch lifter plate
16. Clutch bolt (4)
17. Bearing retainer
18. Bearing
19. Lifter guide



CLUTCH LIFTER MECHANISM ASSEMBLY



1. Cotter pin
2. Washer
3. Clutch lifter cam
4. Bearing
5. Lifter shaft
6. Adjustment locknut
7. Adjustment screw
8. Adjusting arm
9. Adjusting arm pivot pin
10. Adjusting arm spring
11. Bolt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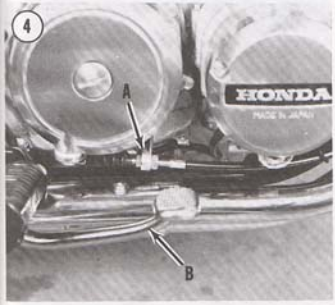
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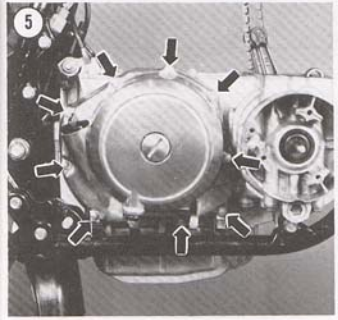
A
B
HONDA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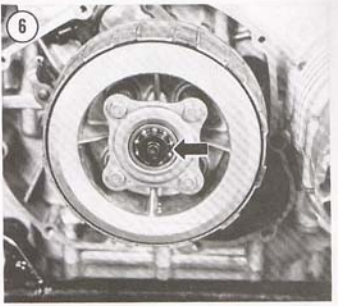
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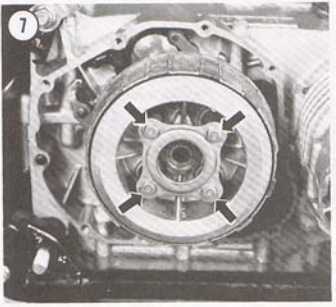
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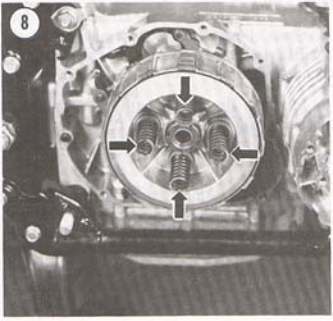
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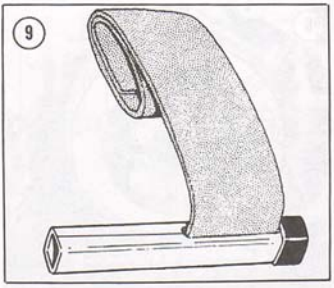


10. Remove the clutch nut and lockwasher. To keep the clutch boss from turning hold it with a strap wrench (**Figure 9**).

NOTE

Clutch nut removal requires a special tool available from a Honda dealer (Locknut Wrench Socket part No. 07716-0020202). Refer to ***Figure 10****.*

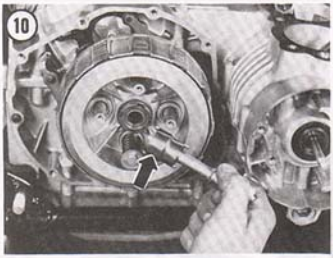
11. Remove the clutch center, plates, discs and pressure plate.
12. Remove the clutch outer housing and guide spacer (**Figure 11**).
13. Remove the inner thrust washer.

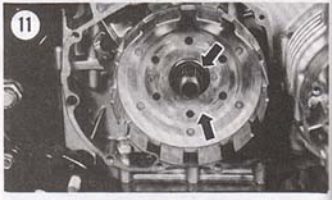
Inspection

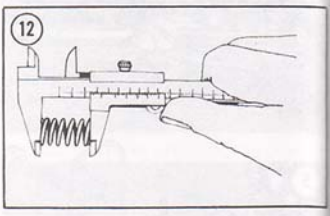
1. Clean all parts in a petroleum based solvent such as kerosene and thoroughly dry with compressed air.

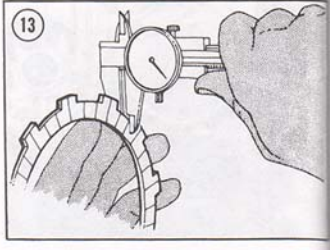
2. Measure the free length of each clutch spring as shown in **Figure 12**. If any of the springs are worn to 1.39 in. (35.4 mm) or less, replace all springs as a set.

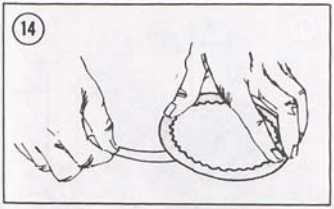
3. Measure the thickness of each friction disc at several places around the disc as shown in **Figure 13**. Replace any disc "A" that is worn to 0.13 in. (3.2 mm) or less. Replace disc "B" if it is worn to 0.009 in. (2.4 mm) or less. For optimum performance, replace all discs as a set even if only a few need replacement.

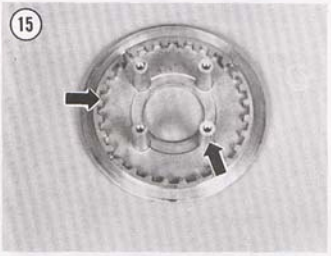


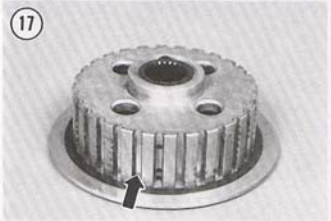


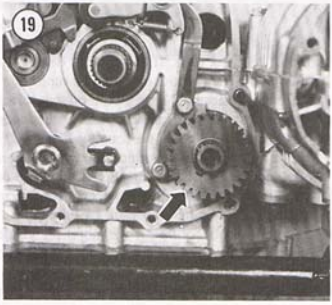




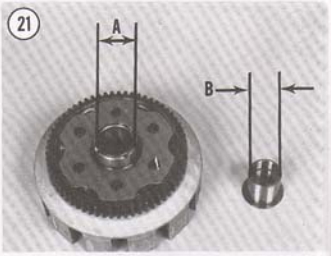




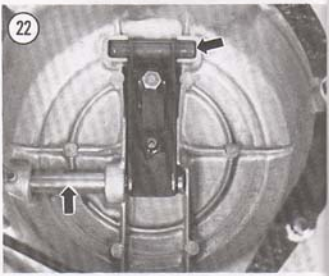




4. Check the clutch plates for warpage on a surface plate such as a piece of plate glass (**Figure 14**). Replace any that are warped 0.012 in. (0.30 mm) or more. For optimum performance, replace all plates as a set even if only a few need replacement.
5. Inspect the condition of the grooves and studs in the pressure plate (**Figure 15**). If either show signs of wear or galling the plate should be replaced.
6. Inspect the condition of the inner splines (**Figure 16**) and outer grooves (**Figure 17**) in the clutch center; if damaged, the clutch center should be replaced.
7. Inspect the condition of the teeth on the outer housing (**Figure 18**). Remove any small nicks on the gear teeth with an oilstone. If damage is severe the clutch housing should be replaced. Also check the condition of the teeth on the driven gear (**Figure 19**); it may also require replacing.



8. Inspect the condition of the slots in the clutch outer housing (**Figure 20**) for cracks, nicks or galling where it comes in contact with the friction disc tabs. If any severe damage is evident, the clutch housing must be replaced.
9. Measure the inside diameter of the clutch outer housing (A, **Figure 21**) and the outside diameter of the guide spacer (B, **Figure 21**) with vernier calipers. Replace the clutch outer housing if worn to 1.183 in. (30.05 mm) or more. Replace the guide spacer if worn to 1.179 in. (29.94 mm) or less.
10. Inspect the condition of the lifter guide bearing. Make sure it rotates smoothly with no signs of wear or damage. Replace as necessary.
11. Check the lifter guide bearing retainer for signs of wear or cracks. This part has a lot of stress placed on it during normal clutch operation. Replace the retainer if there is the slightest crack on either the inner or outer edge.
12. Check the movement of the clutch adjuster arm and lifter shaft in the clutch cover (**Figure 22**). They must operate smoothly or be replaced.



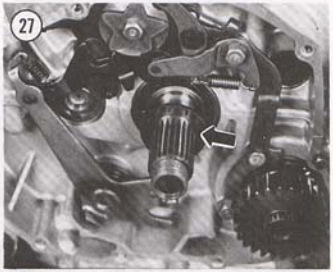
Assembly/Installation

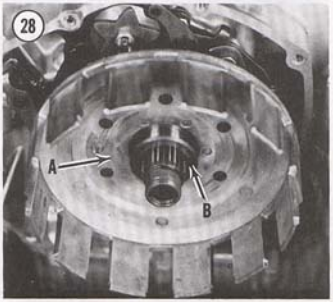
1. Install the disc pressure spring onto the clutch center with the convex or cupped side facing out (**Figure 23**).

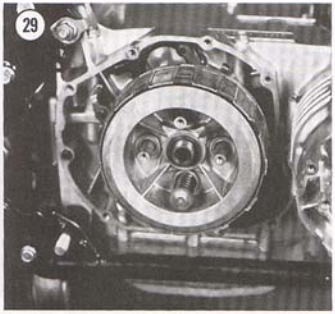
NOTE

If either or both friction discs and clutch plates have been replaced with new ones, apply new engine oil to all surfaces to avoid having the clutch lock up when used for the first time.

2. Install a friction disc "A" (**Figure 24**), a







clutch plate (**Figure 25**) and another friction disc until all are installed. Install friction disc "B" last (this disc is the only one that has thicker tabs than those on friction discs "A").

3. Install the pressure plate (**Figure 26**).
4. Turn the assembly over and install one clutch spring and one bolt with washer to hold the assembly together. This will aid in installation.

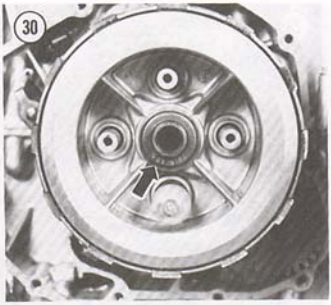
NOTE

Do not tighten the bolt as some play is needed for final alignment of friction plate tabs when installing it into the clutch outer housing.

5. Install the inner thrust washer (**Figure 27**) onto the transmission main shaft.
6. Install the clutch outer housing (A, **Figure 28**) and the guide spacer (B, **Figure 28**).
7. Slide on the clutch parts (clutch center, friction discs, clutch plates and pressure plate) assembled in Steps 1 through 4 (**Figure 29**). Push the assembly on slowly, carefully aligning the tabs of the friction discs into the slots in the clutch outer housing.

NOTE

Friction disc "B," installed last in Step 2, has the wider tabs and will only fit into the outermost section of the clutch outer housing. This is a check for correct location of disc "B" onto the clutch center.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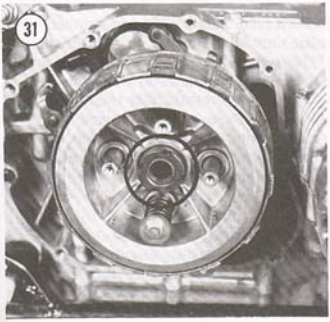
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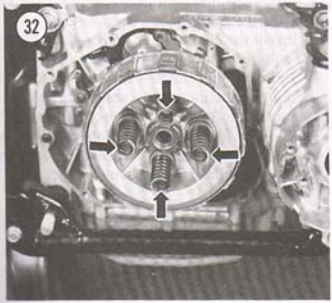
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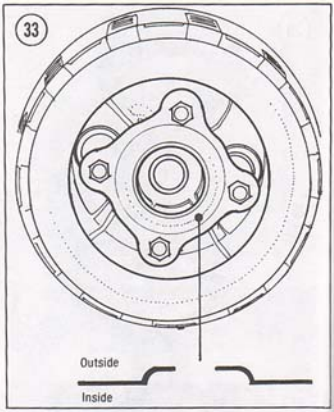
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Outside
Inside


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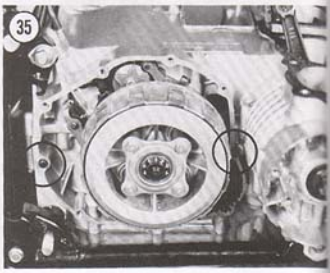
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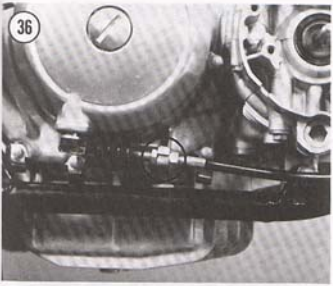
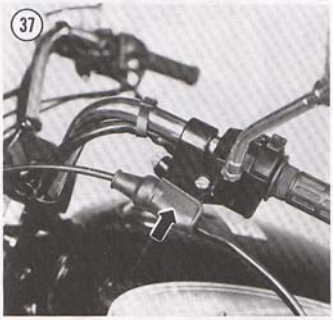
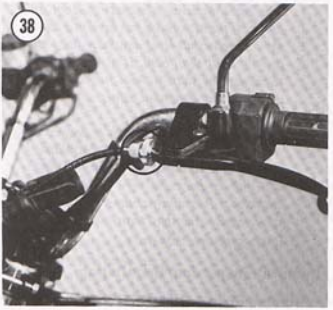






8. Install the lockwasher with the dished side facing toward the outside. The word "OUTSIDE" stamped on it must face outward (**Figure 30**).

9. Install the locknut (**Figure 31**) and tighten to 34-38 ft.-lb. (47-53 N•m). Use the same tool setup as used for removal (**Figure 10**).

10. Remove the one clutch bolt and washer. Install all of the clutch springs (**Figure 32**).

11. Install the clutch lifter plate with the convex or dished side facing outward (**Figure 33**).

12. Install the clutch bolts and tighten them securely in a crisscross pattern in 2 or 3 stages.

13. Install the lifter guide bearing retainer, bearing and lifter guide (**Figure 34**).

14. Install the 2 locating dowels (**Figure 35**) and gasket.

15. Install the clutch cover and the rear brake pedal.

16. Install the clutch cable to the lower adjuster (**Figure 36**) and to the hand lever.

17. Refill the engine with the recommended type and quantity oil; refer to *Changing Engine Oil and Filter* in Chapter Three.

18. Adjust the clutch as described under *Clutch Adjustment* in Chapter Three.

CLUTCH CABLE

Replacement

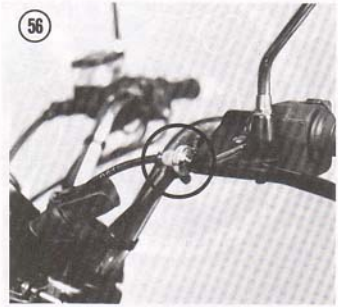
In time the clutch cable will stretch to the point that it will have to be replaced.

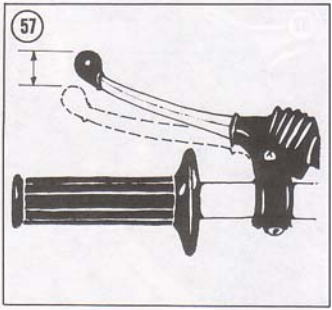
1. Turn the fuel shutoff valve to the OFF position and remove the fuel line to the carburetor.

2. Remove the seat and fuel tank.

3. Pull back the rubber protective boot (**Figure 37**) covering the cable adjuster.

4. At the clutch lever loosen the locknut and turn the adjuster barrel (**Figure 38**) all the way toward the cable sheath. Slip the cable end out of the hand lever.





Clutch Adjustment

The clutch free play adjustment should be checked and adjusted every 4,000 miles (6,400 km).

There are 2 different clutch adjustment areas, the clutch cable and the mechanism adjustment in the engine. The cable adjustment takes up slack caused by cable stretching. The mechanism adustment takes up slack due to clutch component wear. Both areas have to be adjusted correctly for correct clutch operation.

If the proper amount of free play cannot be achieved by using these adjustment procedures, the cable has stretched to the point that it needs to be replaced. Refer to *Clutch Cable Replacement* in Chapter Five.

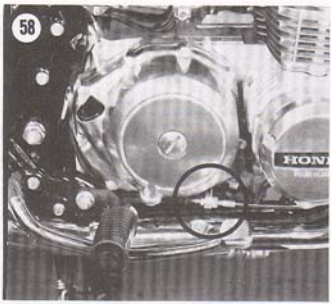
Cable Adjustment

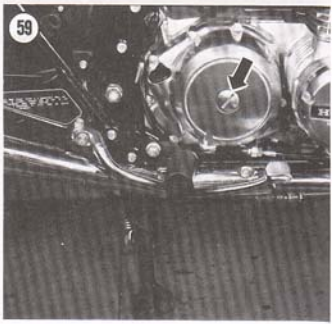
1. At the cluch hand lever, loosen the locknut on the hand lever and screw in the adjuster barrel (**Figure 56**) until 3/8 to 3/4 in. (10 to 20 mm) of free play is obtained at the tip of the lever (**Figure 57**).

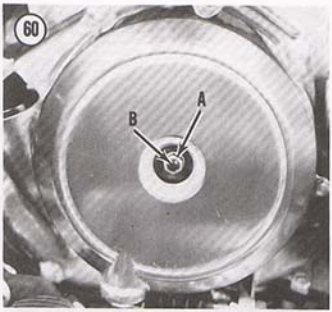
NOTE

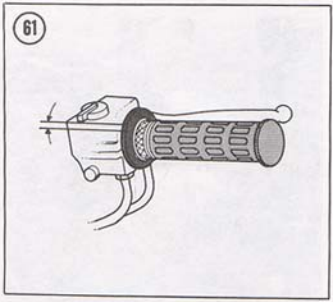
If the proper amount of free play cannot be achieved at the hand lever, additional adjustment can be made at the clutch cable length adjuster.

2. At the hand lever, loosen the locknut and turn the adjuster barrel all the way in toward the hand lever. Tighten the locknut.









3. At the cable length adjuster (below the clutch housing) loosen the locknut and turn the adjuster barrel (**Figure 58**) until the correct amount of lever free play is obtained. Tighten the locknut.
4. If necessary, repeat Step 1 for fine adjustment.

Mechanism Adjustment

1. Remove the cap (**Figure 59**) from the clutch housing.
2. At the mechanism, loosen the locknut (A, **Figure 60**) and turn the adjuster screw (B, **Figure 60**) clockwise until *slight* resistance is felt, then *stop.*
3. From this point, back out the adjuster screw counterclockwise 3/4 of a turn and tighten the locknut. Reinstall the cap.

NOTE

Make sure the adjuster screw does not move when the locknut is tightened.

4. At the cable length adjuster (below the clutch housing) loosen the locknut and turn the adjuster barrel (**Figure 58**) until the correct amount of lever free play is obtained. Tighten the locknut.
5. If necessary, repeat Step 1 for fine adjustment.

NOTE

When making adjustments at the hand lever, do not expose the threads on the adjuster barrel by more than 5/16 in. (8 mm).

6. After adjustment is completed, check that the locknuts are tight on both the hand lever and cable length adjuster.
7. Test ride the bike and make sure the clutch is operating correctly.

Throttle Adjustment and Operation

The throttle grip should have 1/8-1/4 in. (2-6 mm) rotational free play (**Figure 61**). If adjustment is necessary, loosen the locknut and turn the adjuster (**Figure 62**) at the throttle grip in or out to achieve proper free play rotation. Tighten the locknut.

Check the throttle cables from the grip to the carburetor. Make sure they are not kinked or chafed. Replace as necessary.